

**Notice of Allowability**

Application No.

09/520,259

Applicant(s)

VAN BEMMEL, PETER P.

Examiner

Eduardo Garcia-Otero

Art Unit

2123

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/14/04.
2. ☒ The allowed claim(s) is/are 1-56.
3. ☒ The drawings filed on 10/8/2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All   b) ☐ Some\*   c) ☐ None   of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

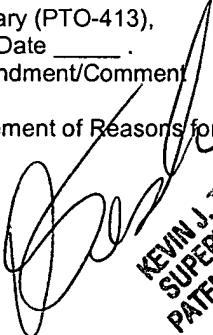
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 12/14/2004
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

  
KEVIN J. TESKA  
SUPERVISORY  
PATENT EXAMINER

## ALLOWANCE

### *Introduction*

1. Title is: METHOD AND APPARATUS FOR MAPPING UNCERTAINTY AND GENERATING A MAP OR A CUBE BASED ON CONDITIONAL SIMULATION OF RANDOM VARIABLES.
2. First inventor listed is: BEMMEL.
3. Claims 1-56 are pending, and are allowed.
4. Applicant's Amendment was received 12/14/04. The amendments to the Specification and Claims are accepted without objection.
5. Acknowledgment is made of applicant's claim for priority to provisional application 60/135,904 filed 05/25/1999.

### *Index of Important Prior Art*

6. **Jones** refers to US Patent 5,838,634.
7. **Matteucci** refers to US Patent 5,884,229.
8. **Tucker** refers to The Computer Science and Engineering Handbook, by Allen B. Tucker, CRC Press, ISBN: 0-8493-2909-4, 1996.
9. **Journel** refers to "Fundamentals of Geostatics in Five Lessons" by Journel, vol 8 AGU, 1989 (mentioned at Specification page 1).
10. **Hogg** refers to Probability and Statistical Inference" by Hogg et al., Third Edition 1988, ISBN 0-02-355810-5, page 613 Table IV The Normal Distribution. Also see Section 6.4 Confidence Intervals for Means page 348-356.
11. **Webber** refers to US Patent 6,081,577.

### *Definitions*

12. McGraw-Hill Dictionary refers to The McGraw-Hill Dictionary of Scientific and Technical Terms, Sixth Edition, by McGraw-Hill Companies, Inc., ISBN 0-07-042313-X, 2003:
13. **Gaussian distribution**-"normal distribution".
14. **normal distribution**-"A commonly occurring probability distribution that has the form... [equations] mean... variance. Also known as Gauss' error curve; Gaussian Distribution."

Art Unit: 2123

15. Applicant's Remarks page 19 (received 12/14/04) defines "**risk related characteristics**" as "to refer collectively to the probability maps, cutoff maps, and confidence limit maps". The Examiner accepts this definition.

*Applicant Remarks*

16. Applicant's Remarks pages 19-35 and amendments to the claims have overcome all prior rejections.

*Claim Interpretation*

17. In claim 1, the preamble term "generating a map" is interpreted as a process step. This map is interpreted as a "useful, concrete and tangible result" according to *State Street*, 149 F3d at 1373, 47 USPQ2d at 1601. See MPEP 2106. Note that generating this map is similar to generating the "final share price" of *State Street*. Said map may be printed or may be displayed on a computer screen. Said map has useful qualities of (at a minimum) setting a final bid price for purchasing mineral rights of an earth formation. Note the similarity with *State Street*:

"[T]ransformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces a useful, concrete and tangible result' -- a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in

subsequent trades." *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601;

18. The term "cube illustrating" in claim 30 is similarly interpreted as generating a three dimensional map.
19. Additionally, all pending claims are directed to complex three dimensional Kriging of scattered data observations, and thus implicitly require a computer. From a practical standpoint, it is economically unfeasible to generate these calculations without a computer. Thus, the pending claims are "computer related inventions" as discussed in MPEP 2106(I).
20. Thus, based upon the above claim interpretations, the pending claims satisfy 35 USC 101.

Art Unit: 2123

***REASONS FOR ALLOWANCE***

21. Independent claim 1 is allowable because the combination of limitations is not anticipated and is not obvious: “(a) gridding said cross section... intersection points” and “(b) obtaining a unique cumulative distribution function associated with each intersection point...” and “(c) choosing a value...” and “(d) assigning each value...”.
22. Claims 2-29, and 42-46 are allowable for the same reasons as claim 1.
23. Independent claim 30 is allowable because the combination of limitations is not anticipated and is not obvious: “(a) investigating properties... intersection points...” and “(b) selecting a value...” and “(c) Assigning a plurality of values...” and “(d) assigning a plurality of colors...”.
24. Claims 31-41, and 47-56 are allowed for the same reasons as claim 30.

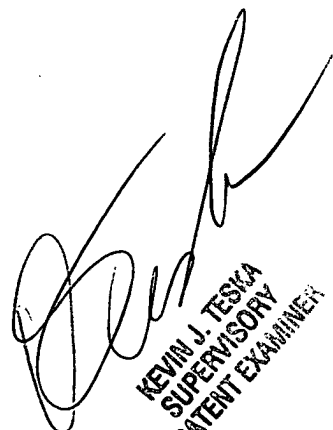
***Conclusion***

25. All pending claims are allowed. All prior rejections and objections are withdrawn.

***Communication***

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo Garcia-Otero whose telephone number is 571-272-3711. The examiner can normally be reached on Monday through Thursday from 9:00 AM to 8:00 PM. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at 571-272-3761. The fax phone number for this group is 703-872-9306.

\* \* \*



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